

WHAT IS CLAIMED IS:

1 1. A cover for use with an inflatable modular
 structure, the inflatable modular structure having a
 core with at least two longerons and a plurality of
 attachment elements disposed thereon for cooperating
5 with a plurality of covers such that each cover is
 releasably attached to the core in the pre-deployed
 configuration, an inflatable shell attached to the
 core, the inflatable shell having an internal surface
 that generally encloses the longerons and the
10 plurality of covers, and in the pre-deployed
 configuration the inflatable shell is folded over, and
 secured to, the covers, and in the deployed
 configuration the inflatable shell is pumped up with
 air, unfolded from the covers, the covers
15 subsequently released from the core and the covers
 being removably attached to a plurality of affixing
 members disposed on the inside surface of the
 inflatable shell such that the covers serve as a
 foundation for securing items in place, the cover
20 comprising:

 a first segment having a longitudinal axis,
 an interior surface, and having an
 arcuate exterior surface perpendicular

to the length of the longitudinal axis,
25 the arcuate exterior surface of the
first segment being adapted to provide
protection to the inflatable shell from
unwanted contact with the core during
the pre-deployed configuration and the
30 arcuate exterior surface having at least
one affixing member for cooperating with
at least one affixing member on the
interior surface of the inflatable shell
such that the arcuate exterior surface
35 is removably attached to the interior
surface of the inflatable shell during
the deployed configuration;

a second segment having a substantially flat
surface and the second segment being
40 adapted to substantially secure items in
place when the arcuate exterior surface
is fastened to the interior surface of
the inflatable shell in the deployed
configuration;

45 a plurality of ribs disposed between, and
joined to, the inner surface of the
first segment and the substantially flat

surface of the second segment, and a plurality of attachment elements disposed on the ribs adapted to cooperate with the attachment elements on the longeron such that the cover is releasably attached to the core in the pre-deployed configuration.

2. A cover for use with a core of an inflatable modular structure, the core having a plurality of attachment elements, the cover comprising:

a first segment having a longitudinal axis, an interior surface, and having an arcuate exterior surface perpendicular to the length of the longitudinal axis;

a second segment having a substantially flat surface;

a plurality of ribs disposed between, and joined to, the inner surface of the first segment and the substantially flat surface of the second segment and the ribs having a plurality of attachment elements; and

the attachment elements on the ribs
cooperating with the attachment elements
on the core such that the cover is
20 removably attached to the core.

1 3. The cover of claim 2 wherein the core
further comprises at least two longerons and the cover
has a width and each longerons having an outer edge
and the width of the cover is substantially the
5 distance between the outer edges of the longerons and
the cover fits over the longerons.

4. The cover of claim 2 wherein the second
segment is substantially rigid.

1 5. The core of claim 2 further
comprising:

a first affixing member disposed on the
arcuate surface of the first segment;
5 an inflatable shell attached to the core of
the inflatable modular structure and the
inflatable shell having an interior
surface, the interior surface
substantially enclosing the cover and
10 core, and a second affixing member
disposed on the interior surface of the
inflatable shell; and

the first affixing member and the second
affixing member cooperating such that
15 the cover is removably affixed to the
interior surface of the inflatable
shell.

1 6. The cover of claim 2 wherein the cover is
substantially hollow.

1 7. The cover of claim 2 wherein the first
segment has an access opening.

1 8. The cover of claim 2 wherein the second
segment has an access opening.

1 9. A cover for use with at least two braces of
a core of an inflatable modular structure, the braces
having a plurality of attachment elements, the cover
comprising:

5 a first segment having a longitudinal axis,
an interior surface, and having an
arcuate exterior surface perpendicular
to the length of the longitudinal axis;

a second segment having a substantially flat
10 surface;

a plurality of ribs disposed between, and
joined to, the inner surface of the
first segment and the substantially flat

15 surface of the second segment and the
ribs having a plurality of attachment
elements; and

the attachment elements on the ribs
cooperating with the attachment elements
on the braces such that the cover is
20 removably attached to the braces.

1 10. The cover of claim 9 wherein the core
further comprises at least two longerons and the cover
has a width and each longeron having an outer edge and
the width of the cover is substantially the distance
5 between the outer edges of the longerons and the cover
fits over the longerons.

11. The cover of claim 9 wherein the second
segment is substantially rigid.

1 12. The core of claim 9 further
comprising:

a first affixing member disposed on the
arcuate surface of the first segment;
5 an inflatable shell attached to the core of
the inflatable modular structure and the
inflatable shell having an interior
surface, the interior surface
substantially enclosing the cover and

10 braces, and a second affixing member
disposed on the interior surface of the
inflatable shell; and

the first affixing member and the second
affixing member cooperating such that
15 the cover is removably affixed to the
interior surface of the inflatable
shell.

1 13. The cover of claim 9 wherein the cover
is substantially hollow.

1 14. A cover for use with at least two longerons
of a core of an inflatable modular structure, the
longerons having a plurality of attachment elements,
the cover comprising:

5 a first segment having a longitudinal axis,
an interior surface, and having an
arcuate exterior surface along the
length of the longitudinal axis;

a second segment having a substantially flat
10 surface;

a plurality of ribs disposed between, and
joined to, the inner surface of the
first segment and the substantially flat
surface of the second segment and the

15 ribs having a plurality of attachment
 elements; and

 the attachment elements on the ribs
 cooperating with the attachment elements
 on the longerons such that the cover is
20 removably attached to the longerons.

1 15. The cover of claim 14 wherein the
 cover has a width and each longeron having an outer
 edge and the width of the cover is substantially the
 distance between the outer edges of the longerons.

1 16. The cover of claim 14 wherein the second
 segment is substantially rigid.

1 17. The cover of claim 14 wherein the first
 segment has an access opening.

1 18. The cover of claim 14 wherein the
 second segment has an access opening.

1 19. The core of claim 14 further
 comprising:

 a first affixing member disposed on the
 arcuate surface of the first segment;
5 an inflatable shell attached to the core of
 the inflatable modular structure and the
 inflatable shell having an interior
 surface, the interior surface

substantially enclosing the cover and
10 longerons, and a second affixing member
disposed on the interior surface of the
inflatable shell; and

the first affixing member and the second
affixing member cooperating such that
15 the cover is removably affixed to the
interior surface of the inflatable
shell.

1 20. The cover of claim 14 wherein the cover
is substantially hollow.

1 21. A cover for being removably attached to a
core of an inflatable modular structure having
attachment elements disposed thereon, the cover
comprising:

5 a first segment having a longitudinal axis,
an interior surface, and having an
arcuate exterior surface perpendicular
to the length of the longitudinal axis;

a second segment having a substantially flat
10 surface; and

a plurality of ribs disposed between, and
joined to, the inner surface of the
first segment and the substantially flat

surface of the second segment and the
15 ribs having a plurality of attachment
elements for cooperating with the
attachment elements on the core.

1 22. A core of an inflatable modular structure
having at least two longerons and a plurality of
attachment elements disposed on the longerons for
cooperating with, and being removably attached to, the
5 attachment elements of the cover of claim 21.

1 23. A core of an inflatable modular structure
having at least two braces and a plurality of
attachment elements disposed on the braces for
cooperating with, and being removably attached to, the
5 attachment elements of the cover of claim 21.
attachment elements of the cover of claim 21.

1 24. A method of using a cover with a core of an
inflatable modular structure having an inflatable
shell comprising the steps of;

attaching a plurality of covers to the core in a
5 pre-deployed configuration;

folding the inflatable shell about the covers in
the pre-deployed configuration;

unfolding the inflatable shell in the deployed
configuration;

10 inflating the inflatable shell in the deployed
configuration;

 detaching the covers from the core in the
deployed configuration; and

 attaching the covers to the inflatable shell in
15 the deployed configuration.

1 25. A method of using a cover with a core of an
inflatable modular structure having a plurality of
attachment elements thereon and an inflatable shell
which utilizes the cover of claim 2.

1 26. A method of using a cover with a core of an
inflatable modular structure having a plurality of
braces and attachment elements disposed thereon and an
inflatable shell comprising the steps of;

5 attaching a plurality of covers to the core in a
pre-deployed configuration;

 folding the inflatable shell about the covers in
the pre-deployed configuration;

 unfolding the inflatable shell in the deployed
10 configuration;

 inflating the inflatable shell in the deployed
configuration;

 detaching the covers from the core in the
deployed configuration; and

15 attaching the covers to the inflatable shell in
the deployed configuration.

1 27. The method of claim 26 utilizing the cover
of claim 9.

1 28. A method of using a cover with a core of an
inflatable modular structure having a plurality of
longerons and attachment elements disposed thereon and
an inflatable shell comprising the steps of;

5 attaching a plurality of covers to the core in a
pre-deployed configuration;

 folding the inflatable shell about the covers in
the pre-deployed configuration;

 unfolding the inflatable shell in the deployed
10 configuration;

 inflating the inflatable shell in the deployed
configuration;

 detaching the covers from the core in the
deployed configuration; and

15 attaching the covers to the inflatable shell in
the deployed configuration.

1 29. The method of claim 28 utilizing the cover
of claim 14.